IN THE CLAIMS:

1. (CURRENTLY AMENDED) A method of optimizing a coefficient of performance of a refrigeration system comprising the steps of:

compressing a refrigerant to a high pressure in a compressor device;

cooling said refrigerant by exchanging heat between said refrigerant and a first fluid medium in a heat rejecting heat exchanger;

expanding said refrigerant to a low pressure in an expansion device;

evaporating said refrigerant by exchanging heat between said refrigerant and ~~an airflow~~a second fluid in a heat accepting heat exchanger;

sensing a parameter of said refrigeration system;

comparing said parameter to an efficiency parameter representative of an efficient refrigeration system;

determining ~~if~~a state of efficiency of the refrigeration system ~~is operating at an efficient state or an inefficient state~~; and

adjusting said refrigeration system if the step of determining said state of efficiency determines that the refrigeration system is operating at ~~said~~an inefficient state.

2. (ORIGINAL) The method as recited in claim 1 wherein said refrigerant is carbon dioxide.

3. (ORIGINAL) The method as recited in claim 1 wherein said parameter is an outlet temperature of said refrigerant exiting said heat rejecting heat exchanger.

4. (ORIGINAL) The method as recited in claim 1 wherein said parameter is an outlet enthalpy of said refrigerant exiting said heat rejecting heat exchanger.

5. (CURRENTLY AMENDED) The method as recited in claim 1 wherein said parameter is a pressure ~~drop of~~difference between a first pressure of said refrigerant ~~across~~entering said heat rejecting heat exchanger and a second pressure of said refrigerant exiting said heat rejecting heat exchanger.

6. (CURRENTLY AMENDED) The method as recited in claim 1 wherein said parameter is a flow rate of said first fluid that exchanges heat with said refrigerant in said heat rejecting heat exchanger.

7. (CURRENTLY AMENDED) The method as recited in claim 1 wherein said parameter is a temperature difference between a refrigerant temperature of said refrigerant exiting said heat rejecting heat exchanger and a fluid temperature of said fluid entering said heat rejecting heat exchanger.

8. (ORIGINAL) The method as recited in claim 1 wherein said parameter is a suction pressure of said refrigerant entering said compressor device.

9. (ORIGINAL) The method as recited in claim 1 wherein said parameter is a temperature of said refrigerant exiting said compressor device.

10. (CURRENTLY AMENDED) The method as recited in claim 1 wherein said parameter is a size of an opening of said expansion device.

11. (ORIGINAL) The method as recited in claim 1 wherein said parameter is a quality of said refrigerant entering said heat accepting heat exchanger.

12. (ORIGINAL) The method as recited in claim 1 wherein said parameter is a coefficient of performance of the refrigeration system

13. (ORIGINAL) The method as recited in claim 1 wherein said parameter is a refrigerant mass flow rate of the refrigeration system.

14. (ORIGINAL) The method as recited in claim 1 wherein the step of adjusting said refrigeration system includes increasing a flow rate of said fluid medium through said heat rejecting heat exchanger.

15. (CURRENTLY AMENDED) The method as recited in claim 1 wherein the step of adjusting said refrigeration system includes increasing a size of an opening of said expansion device.

16. (CURRENTLY AMENDED) A transcritical refrigeration system comprising:

a compression device to compress a refrigerant to a high pressure;

a heat rejecting heat exchanger for cooling said refrigerant, and a first fluid flows through said heat rejecting heat exchanger to exchange heat with said refrigerant;

an expansion device for reducing said refrigerant to a low pressure;

a heat accepting heat exchanger for evaporating said refrigerant, and ~~an airflow~~a second fluid exchanges heat with said refrigerant in said heat accepting heat exchanger;

a sensor to sense a parameter of the refrigerant system; and

a control that stores an efficiency value of said parameter representative of an efficient state of the refrigeration system, compares said efficiency value to said parameter to determine ~~if~~a state of efficiency the refrigeration system ~~is in an efficient state or an inefficient state~~, and adjusts the refrigeration system if the refrigeration system is determined to be operating in an inefficient state.